REMARKS

Claims 1-13, 15-19, 21, 23, and 24 are pending in the application and have been examined. Claims 1-13, 15-19, 21, 23, and 24 stand rejected. Claim 1 has been amended. Reconsideration and allowance of Claims 1-13, 15-19, 21, 23, and 24 is respectfully requested.

The Rejection of Claims 1-13, 15-19, 21, 23, and 24 Under 35 U.S.C. § 112, First Paragraph (Written Description)

Claims 1-13, 15-19, 21, 23, and 24 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, the Examiner asserts that the instant specification does not appear to provide support for incubating the embryos. The Examiner notes that on page 7 of the specification applicants teach that embryos can be cultured on a development medium, however the Examiner has taken the position that the term "incubating the embryos" is not supported. In order to facilitate prosecution, Claim 1 has been amended at step (c) to replace the term "incubating" with the term "culturing." Support for this amendment is found throughout the specification, for example at page 1, lines 14-24; and page 7, lines 1-9. Accordingly, removal of this ground of rejection is respectfully requested.

The Rejection of Claims 1-13, 15-19, 21, 23, and 24 Under 35 U.S.C. § 112, Second Paragraph (Indefiniteness)

Claims 1-13, 15-19, 21, 23, and 24 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner has taken the view that there is insufficient antecedent basis for the limitation "the embryos" in Claim 1.

In order to clarify the invention, Claim 1 has been amended at step (a) to replace the term "embryos" with the phrase "pine embryogenic cells." Claim 1 at steps (b) and (c) have also been amended to insert the phrase "pre-cotyledonary pine somatic embryos." Accordingly, removal of this ground of rejection is respectfully requested.

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The Rejection of Claims 1-13, 15-19, 21, 23, and 24 Under 35 U.S.C. § 102(b) As Being Anticipated by U.S. Patent No. 5,294,549 (Pullman et al.)

Claims 1-13, 15-19, 21, 23, and 24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,294,549 (Pullman et al.). The Examiner characterizes Pullman et al. as teaching a method of cultivating conifer pre-cotyledonary embryos in a maintenance medium comprising nutrients that sustain embryos having an osmolality of 170 mM/Kg to about 240 mM/Kg (with reference to Col. 15, lines 1-3). The Examiner further characterizes Pullman et al. as teaching the pre-cotyledonary embryos are then transferred to a medium comprising gibberellin and/or abscisic acid at concentrations of 0.05 and 15 mg/L (with reference to Col. 13, lines 40-60) and also comprising activated charcoal (Col. 13, lines 50-54) for at least three weeks (Col. 15, lines 23-26). The Examiner notes that this medium has a reduced osmotic level compared to the one of the maintenance medium, thus less than 170 mM/Kg (Col. 15, lines 13-14). The Examiner further characterizes Pullman et al. as teaching the pre-cotyledonary embryos are transferred to a development medium wherein the osmolality is above about 400 mM/Kg (with reference to Col. 15, line 60). The Examiner further characterizes Pullman et al. as teaching the use of activated charcoal at a concentration of 2.5g/L (with reference to Table 2), and a media with a pH of 5.7 (with reference to Table 1). Finally, the Examiner characterizes Pullman et al. as teaching that this method can be used for many species, including Loblolly pine (with reference to Col. 7, lines 50-60). The Examiner asserts that 50% and 75% of the embryo population taught by Pullman et al. is inherently at the same developmental stage, absent evidence to the contrary. The Examiner admits that Pullman et al. is silent with regard to the time frame claimed in step (c), but further asserts that since Pullman et al. follows the same steps as those claimed in the instant application, the time frame characteristic of 9 to 14 weeks is

enough for inherent anticipation, absent evidence to the contrary. Applicants respectfully traverse this ground of rejection for the following reasons.

As an initial matter, it is noted that the Pullman et al. reference was previously cited by the Examiner in the Office Action dated June 12, 2007, which was previously addressed in applicants' response filed on August 8, 2007. It is further noted that in the subsequent Office Action mailed on November 14, 2007, the only grounds of rejection were based on 35 U.S.C. § 112, with no mention of either the Pullman et al. reference or the arguments presented by applicants regarding the prior rejection based on the Pullman et al. reference. Therefore, it appeared that the Examiner had withdrawn the previous rejection based on the Pullman et al. reference. As stated in the M.P.E.P § 707.07, in taking up an amended application for action, the Examiner should note in every letter all the requirements outstanding against the application and every point in the prior action of an Examiner which is still applicable must be repeated or referred to, to prevent the implied waiver of the requirement. As further stated in M.P.E.P § 707.07, "[w]here the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it." Therefore, for at least the reasons described in applicants' response to the Office Action mailed on August 8, 2007, applicants maintain the view that the claimed invention is novel and non-obvious in view of Pullman et al.

With regard to the Examiner's assertion in the instant Office Action that Pullman et al. discloses transferring embryos to a medium comprising gibberellin and/or abscisic acid at concentrations of 0.05 and 15 g/L (with reference to Col. 13, lines 40-60) and comprising also activated charcoal (with reference to Col. 13, lines 50-54), for at least 3 weeks (with reference to Col. 15, lines 23-26), it is noted that the passages now relied on by the Examiner describe the singulation stage used to culture Douglas-fir somatic embryos. There is no teaching or

suggestion in Pullman et al. to culture pine embryos in the multistep process as recited in Claim 1, with a first incubation on maintenance media, followed by incubation in synchronization media, followed by incubation in development media.

As described in Pullman et al., "Douglas-fir generally requires an intermediate step between the late proembryo growth stage and the final cotyledonary embryo development stage which is not necessary for other species. The proembryos tend to form in tight clumps or clusters which must first be singulated before going to the development stage." Pullman et al. at Col. 8, lines 18-23 (emphasis added). Consistent with this teaching regarding the need for singulation in Douglas-fir culture, Examples 1, 2, 3, 4, 5, 6, and 7 of Pullman et al., all directed to growth of Douglas-fir embryos, all include the step of singulation (e.g., see Col. 14, line 4, to Col. 20, line 40). In contrast, the methods for culturing embryos from Norway spruce taught in Pullman et al. involved plating directly from a maintenance medium onto solid development medium in Examples 8, and 9, with no singulation step (see Pullman et al. at Col. 20, line 41, to Col. 23, line 30).

Moreover, Pullman et al., does not remotely teach, suggest, or provide any motivation to produce a synchronized population of cotyledonary pine somatic embryos as claimed.

As described in Examples 1 and 2 of the instant specification, the present inventors discovered through experimentation that culturing pine embryos in synchronization medium containing activated charcoal and at least one of abscisic acid and a gibberellin prior to incubation in development media inhibited precocious embryo development and greening, while promoting singulation and synchronization of the cultures, resulting in embryos very uniform in size in comparison to control cultures. See specification at page 19, lines 19-31.

Therefore, it is noted that the incubation of pre-cotyledonary pine embryogenic cells in synchronization media for 0.5 to 5 weeks prior to incubation in a development media as recited

in Claim 1 step (b) is an important distinction between the Pullman et al. reference and the present invention.

In this regard, the Examiner has further asserted that "similar methods are presumed to inherently possess the same properties." However, contrary to the Examiner's assertion, it is further noted that the methods described in the Pullman et al. reference do not inherently possess the same properties of the claimed invention. With regard to inherency, as stated in M.P.E.P. § 2112, "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

It is noted that the media used in the treatment of the control Loblolly pine embryogenic cell culture in Example 2 of the instant specification is very similar to the media used in the treatment of the Norway spruce embryos using media 1 in Example 9 of Pullman et al., as shown in the table below.

Comparison Between Example 9 of
Pullman et al. and Example 2 in the instant Specification

Media	Pullman et al (Example 9)	Present Invention (Example 2)
Maintenance	BM_B + 2,4,-D (5uM); Kinetin (2uM); BAP (2uM) (see TABLE 8)	BM_2 + 2,4-D (5uM); Kinetin (0.5uM); BAP (0.5uM) (See TABLE 2)
Development	Media 1: BM_D+ 50mg/L ABA; 0.125% activated charcoal (see TABLE 9)	BM_4 + 25 mg/L ABA; 0.1% activated charcoal (see TABLE 2)

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As mentioned above, Example 2 of the instant specification demonstrates that control Loblolly pine embryogenic cell cultures grown in maintenance medium and transferred directly to development media containing 25 mg/L ABA and 0.1% activated charcoal (see TABLE 2) did not result in a synchronized population and instead were observed to be cleaving, growing, and forming embryo suspensor masses, with embryos seen in many different developmental stages. See specification at page 19, lines 1-5. Therefore, because the media 1 conditions of Pullman et al. are very similar to that of the control culture in Example 2, a similar result would be expected, with no synchronization.

In sharp contrast, as further described in Example 2 of the instant specification, Loblolly pine embryogenic cell cultures that were cultured in synchronization media prior to incubation in development media "were very uniform in size compared to the control embryos." Specification at page 19, lines 25-26. The study described in Example 2 concluded that "uniform growth of early stage embryos before transfer to development medium can be achieved by pre-treating cultures in a synchronization medium containing activated charcoal and at least one of abscisic acid and a gibberellin. This treatment synchronized cotyledonary embryo development and maturation." Page 19, lines 27-31.

Because Pullman et al. does not disclose or suggest culturing pine embryos in a synchronization medium prior to development as claimed, the cited reference fails to teach or suggest all the elements of the claimed invention and therefore does not anticipate or render obvious the method of the claimed invention. Accordingly, removal of this ground of rejection is respectfully requested.

CONCLUSION

In view of the foregoing remarks, applicants submit that all of the pending claims are in condition for allowance. Reconsideration and favorable action is requested. The Examiner is

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further requested to contact the applicant's representative at the number set forth below to discuss any issues that may facilitate prosecution of this application.

Respectfully submitted,

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